

From: [PETERSON Jenn L](#)
To: [Burt Shephard/R10/USEPA/US@EPA](#); [Eric Blischke/R10/USEPA/US@EPA](#); [Chip Humphrey/R10/USEPA/US@EPA](#)
Subject: FW: Comments on ERA Lines of Evidence and PRGs
Date: 03/03/2010 01:59 PM

FYI - comments on what I could review. These are not complete.

From: PETERSON Jenn L
Sent: Wednesday, March 03, 2010 1:51 PM
To: ANDERSON Jim M
Subject: Comments on ERA Lines of Evidence and PRGs

Jim,

Here are some initial comments on the initial PRGs and the February 19, 2010 table:

1. The PRG table that outlines numeric values for ecological and tissue lines of evidence has not been revised to show a complete list of lines of evidence from the risk assessment. The table most recently sent out is dated March 27, 2009. Is there a newer table available that I have not seen? This table is missing some very important lines of evidence for the ERA:
 - a. There are no PRGs for higher trophic level birds such as osprey and eagle for chemicals like DDE, PCB TEQ (or surrogate PCB 77), and dioxin TEQ (or surrogate 2,3,7,8-PCDF). The only PRGs to protect these receptors are values calculated for lead and Total PCBs. In parts of the river (e.g. RM 6-7) total TEQ risk is driven by dioxin / furan contribution to TEQ and not PCBs. Therefore, a PRG for total PCB will not cover the dioxin / furan risk. The only numeric PRG for birds is for the spotted sandpiper, which does not represent higher trophic level risk.
2. Evaluation of Ecological Lines of Evidence for Use in the FS Table
 - a. This table does not present all lines of evidence as per EPA direction in the problem formulation. I was only able to review a few, but it definitely shows that the table should be reviewed for concurrence with the risk assessment as EPA directed in the problem formulation. For example, the shorebird CPECs identified do not represent the whole list if you are looking at individual beach exposures. Additional COCs that screen in for individual beaches include Sum DDE, copper and total TEQ.
 - b. This table indicates the LWG does not recommend using the Hyalella growth empirical test results for decision making. This should be clarified in the meeting.
 - c. The FPM results should be used with caution, as the model has not been fully reviewed. Without this review being completed, the SQGs developed from this model should not be used without collaboration from other lines of evidence (national SQGs, etc.). Reliability alone should not be the only consideration when selecting between SQG sets – defensibility of the model, sensitivity of outcomes, set up and chemical lists, and variability should also be considered. More work on

model review is needed to address the following concerns:

- i. Reliability of individual SQGs have not been presented, only for the whole set which does not have a unique solution. Therefore, FPM SQGs can therefore only be used as a set. For the set presented, however, for FS this means that all stations must meet all the FPM numeric PRGs at each location, not just values for individual chemicals.
 - ii. Reliability defined in terms of balancing false negatives and positives is the only determinate of model outcome. Therefore, there are several chemical solutions for different chemicals that result in a similar reliability, but no sensitivity analysis has been presented to choose between them. The LWG indicated they conducted this analysis at the recent benthic meeting in Seattle. Not only do we not currently understand the potential range of SQGs as model output, we have no defensible process to determine the validity of the selected SQG set compared to the potential range of values in terms of predicting toxicity. Model output range has been shown to be significant for different chemicals.
 - iii. Small variations in chemical concentration results in widely varying reliability results. This shows the reliability calculations are extremely sensitive and currently not a good measure for selecting models. For one model, it was shown that small changes in cadmium and ammonia (0.283 mg/kg to 0.39 mg/kg cadmium and 92.3 to 141 mg/kg ammonia) led to drastically different reliabilities false negatives 7 to 22; false positives 68 to 44).
 - iv. The bias in the dataset toward a high number of no hits has skewed the reliability statistics. Without the correct interpretation of this effect, predicted hit and no-hit reliabilities are biased in a way that does not reflect reality. Further examination of the high screen has shown that even allowing a higher false negative rate will not result in better predictive hit reliability. In fact, we will never get good reliability results (primarily predicted hits) at the upper screen using this dataset. If we can never reach our predicted hit reliability other model considerations such as bioavailability should be explored further.
 - v. Bioavailability has not been addressed in the model. The model is not organic carbon normalized.
- d. SQGs developed nationally have been truly validated using the Portland Harbor dataset while the FPM SQGs have not. The same dataset was used to calibrate / develop the model as was used to evaluate its reliability. Validation of the model values should be conducted before the SQGs are used for decision making, and it is this comparison that should be used in comparing reliability between models. At this point, FPM SQGs should be used in conjunction with other national SQG values (e.g. don't drop other lines of evidence for predicting benthic toxicity).
- e. Water LOEs are not in the table at all – surface water and transition zone water. This is important for all receptors, but is essential for receptors like amphibians and

plants given water comparisons is the only line of evidence in the risk assessment.

- f. Bird egg tissue residue lines are evidence are not recommended – these lines may be strongest line in the risk assessment since the estimation of risk has been field validated in other areas of the Willamette and Columbia. It is not supportable that the BMFs are more “unreliable” than an assumption that a dietary model for another species (e.g. pheasant in the case of dioxins / furans) correlates to toxicity on piscivorous birds. Even you use the lower end BMFs as compared to the higher end you still show a risk.